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New Method of Plating.

Dr. Slayton, of Madison, Ind., has communicated a new method of plating to the *Dental News Letter*, which we condense as likely to be interesting to our readers. He takes a set of teeth of silver, copper or brass, and after first carefully removing all grease, rubs one side with mercury until it has assumed the mirror appearance, and then with a pair of tweezers lays on the gold or other foil cut in small strips; he then carefully presses it into the teeth, rubbing it well in, and treats another side the same way and so on. He can lay as many thicknesses of foil as he likes, only taking care that one is firmly fixed before the other is begun. By placing the whole in a small oven, and applying a spirit lamp, the mercury is driven off, and burnishing with a bloodstone or steel burnisher, at first not leaning very hard, he obtains a rich gold plating, which will not even melt off, and can only be removed by a file.

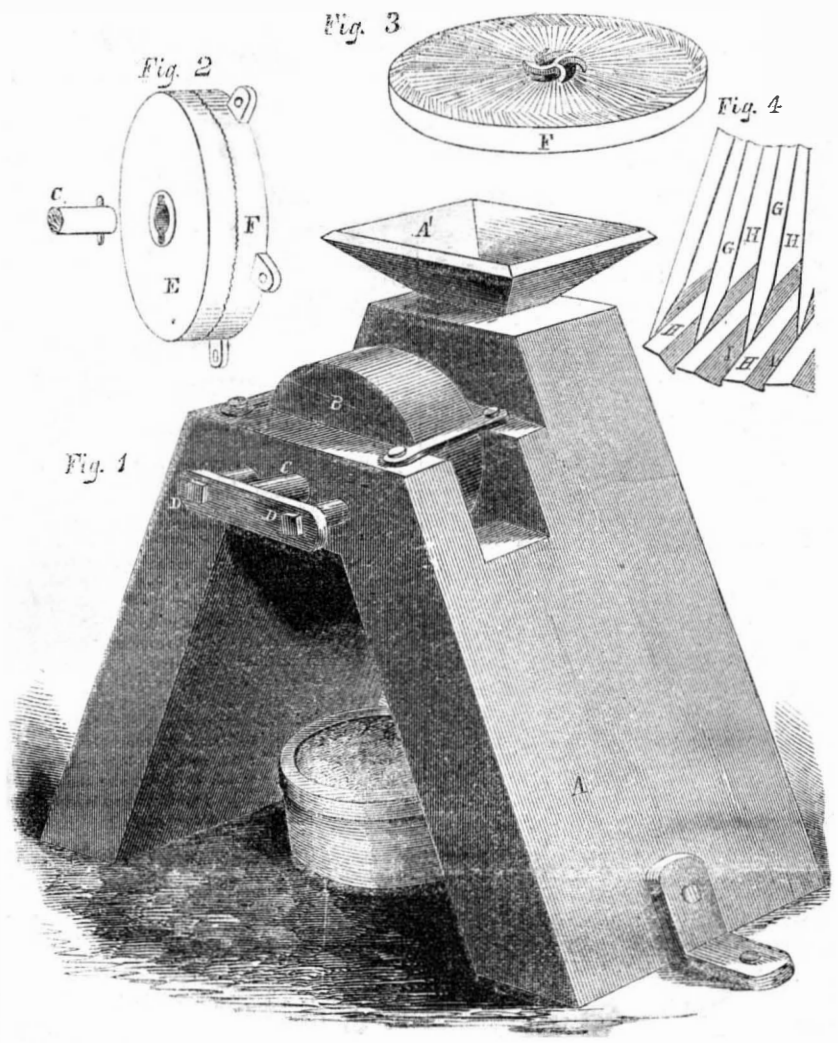
Use of the Telegraph in India.

The news burst on India like a thunderclap that the native regiments at Meerut and Delhi had mutinied, murdered their officers, massacred all the English inhabitants of Delhi, placed the King of Delhi on the throne, and threatened the empire. All this happened on the 11th of May. On the 13th it was known by telegraph to Europeans only throughout India—I say to Europeans only, for immediately the post was stopped, and an embargo placed on all native correspondence. It is not too much to say that the telegraph saved India. Whether or not the report is true that the 15th of May was the day fixed for a general rising of the Sepoy regiment and massacre of all Europeans in the Bengal Presidency, cannot be known yet—perhaps never will be known. If true, (and certainly the rumor appeared with strange coincidence at places far apart,) the 3d cavalry spoilt all by beginning on the 11th at Delhi. In a moment the news was flashed to Lahore and Peshawur, to Allahabad and Calcutta, to Bombay and Madras; and all British India was on the alert.—*London Times.*

The Canadian Canals.

The ship canals of Canada are among the finest in the world. The locks are none of them less than 200 feet long and 50 feet wide. In the Lachine canal there are five locks and 64 feet rise of water; in the Beauharnois canal, around the Cedars, nine locks and 83½ feet; in the Cornwall seven locks and 64 feet. The Canadians are also *some* on bridge-building. The Victoria bridge, which crosses the St. Lawrence at Montreal, will cost, when finished, seven and a half millions of dollars, which is only a half million less than the original cost of the Erie canal, which is the largest in America.

STOUT'S CORN MILL.



The accompanying engravings represent a very cheap and simple metallic mill to be operated by hand or power, and mainly intended for coarsely grinding grain for farm use.

Fig. 1 is a perspective view of the whole, Fig. 2 is a similar view of the grinding parts slightly separated. Fig. 3 shows the face of one of the grinding disks, and Fig. 4 shows on a large scale, the peculiar arrangement of the grooves or "dress" of the metal.

A is the frame, and A′ a hopper which may be of any size and form desired. B is a pulley to receive a belt, and C the shaft on which both the pulley and the grinding disk is mounted. D D are bolts by which the shaft C is moved endwise and adjusted. E is the running disk, and F the fixed one. G G are the radial furrows, and H H are the lands or plane portions of the faces. I I are shallower furrows which stand at an angle different from G, and in which the grain is chiefly crushed.

The grooves or furrows, G, are almost perpendicular on their acting edges, and consequently do not incline to catch and crush the grain, but only to allow it to travel outward from the center where it is received. On reaching the grooves, I I, each grain is rapidly crushed and discharged, the shallow character of I I making it impossible for the grain to escape without disintegration, and the angle of the grooves greatly facilitating the rapidity of its escape.

By this device the grain is ground sufficiently fine in a very rapid manner and without heating. The inventor assures us that disks nine inches in diameter, (the size which he prefers for mills to be driven by power,) can be driven at from 300 to 400 revolutions, and will grind five bushels of corn per hour.

This mill was patented Dec. 16, 1856. For further particulars, address the inventor and patentee, Thomas B. Stout, Keyport, N. J.

Color of Houses.

A valued correspondent in Michigan, who has had much experience in rural affairs, and is a true appreciator of beauty and harmony, has sent us a communication to the effect that he is surprised at the want of taste and realization of picturesque effect which is displayed in the coloring of houses; and we must confess that we wish persons building a house or painting the outside would just pause a moment before beginning, and think what style or color will best harmonize with the surrounding scenery. Thus, he truly remarks that gray, drab, or buff for cottages, and for a large mansion with broad roofs and spacious verandahs, a gray or drab; or if built of brick or stone, a gray is most suitable. No color gives so much liveliness, or evinces so much taste and refinement, as a light buff, with the casings or cornices a shade or two darker.

Strong positive colors, such as white, red, green, etc., are usually in bad taste, especially when surrounded by green fields, umbrageous orchards, and golden fruits; while a mild neutral tint lends a charm which the rest do not afford.

A singular fashion prevails in this country of clothing every dwelling, no matter what its situation, size, or character, in sepulchral white, whether it stands on the rising knoll of some pleasant plain, or in the quiet country embosomed in groves; and it is difficult to explain the popularity of this color; it is not cheaper, nor yet more durable than others, and is only suitable where it is almost entirely secluded among the trees.

"In whose *inclosed shadow* there was set
A fair pavilion, *scarcely* to be seen,"

says Spencer, and this is the only situation where white does not violate all principles of harmony and beauty. We should look a little more closely at the position of the house we wish to paint, should study more minutely the harmonious relations of color in natural objects, and should endeavor to appreciate more truly the divine principles of beauty which everywhere surround us, and then in coloring large buildings we should not make the glaring and offensive mistakes which everywhere disturb the eye of him who has a just and true idea of the harmony of nature.

Ice Water.

An extensive refreshment saloon in this city has introduced a novel and elegant method of serving ice water for the use of guests on their tables. The ordinary method is by placing small lumps of ice in the bottles or pitchers of water, and allowing them by their melting to cool the water by which they are surrounded, or else to place lumps of ice on a dish, and each one takes the quantity they require. The new method, however, is far preferable, both for cleanliness and taste. A glass bottle is filled with Croton water, and then placed in a freezing mixture of ice and salt; in about two hours the contents of the bottle will have become one mass of clear, beautiful ice, possessing all the properties and flavor of Croton water. These bottles of ice are placed on the table, and the warmth of the atmosphere gradually melts it, and from it you pour your glass of ice water, and leave behind a hard mass of ice, which has to liquify for the next customer. We understand that the ice thus prepared melts very slowly, and that very few bottles are broken in the freezing process. On the whole, it is a great improvement on the old method.

Education in England.

We see from a report of the Registrar General to Sir G. Gray, just issued, that amongst the marriage statistics no fewer than 44,846 husbands, and 62,672 wives made their marks, and out of the entire number married during the year 1855, more than one-half could not sign their names. This is a fact which makes us think that the authorities had better at once stop arguing in favor of or against the voluntary or governmental systems of education, and at once adopt some system by which all English children shall be educated; and as State education has so eminently succeeded here, might not England take a lesson in our school and follow suit?

It is reported that a block of pure crystalline ice, weighing near 25 pounds, was lately discovered lying in a field in England, the morning after a very stormy night. Mezeray, in his History of France, mentions a block of ice weighing 100 pounds, that fell during a thunder storm in the year 1510.

The *Genie Industriel* for August informs us that five experiments on the cultivation of the Sorghum, or Chinese sugar cane, in France, principally near Paris, have been attended with great success.

Sound travels at the rate of 1,125 feet in a second, at the temperature of 60° Fah., or 1,090 feet per second at 32 ° Fah. This is increased 1·14 feet for every degree of temperature of Fahrenheit's thermometer.

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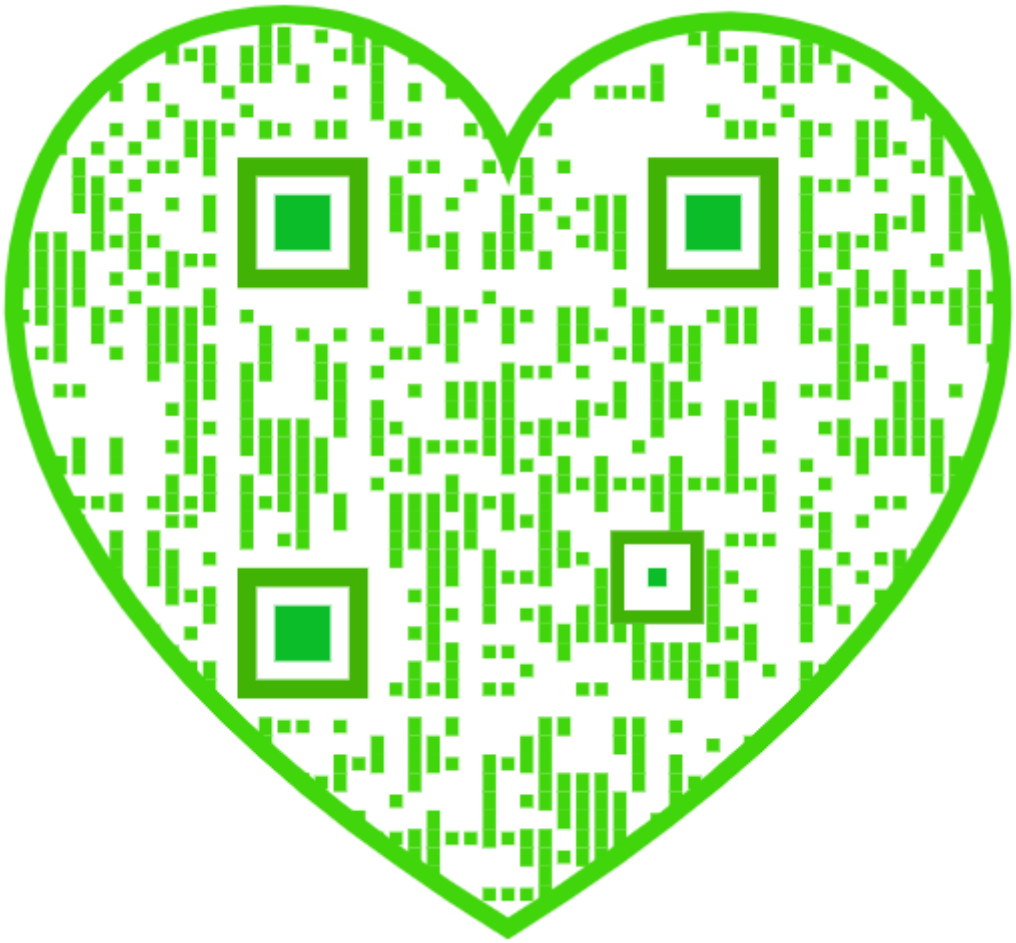

Issued from the United States Patent Office

FOR THE WEEK ENDING SEPTEMBER 8, 1857.

[*Reported officially for the Scientific American.*[

COAL SIFTERS—Sanford Adams, of Boston, Mass. : I claim attaching the sieve to the bottom of the rotating spindle and the spindle to the cover of a barrel, in the manner and for the purpose as above specified.

SEED PLANTERS—Cyrus C. Aldrich, of Faribault, Min. Ter. : I claim the box, I, provided with the plunger, c, when said plunger is operated by the lever frame, J, arranged as shown and described for the purpose set forth.

[This invention consists in making the boxes which measure and deliver the seed with a convex or semi-cylindrical bottom, fitting into a concave recess; they have a perforation in the bottom, and are gradually oscillated to and fro by means of levers connected by cranks to the axle of the cart; also a box provided with a plunger operated on by a lever frame which regulates the delivery of the seed, and the application of weight in the covering up of the seed, and compressing the soil upon it. This class of machines has often failed from the passages becoming clogged with earth, but in this invention this is prevented by the plungers and accompanying machinery. There is a marker attached to the planter, which marks the place where the seed has been deposited and covered, and thus enables the driver to plant in rows that are perfectly parallel.]

CORN PLANTERS—D. R. Alden, of Unionville, O. : I do not claim the wheel, F, for distributing the seed or conveying it from the hopper into the spout, for they are well known and in quite common use.

But I claim operating or rotating the wheel, F, by means of the belt K, having knobs, i, attached, and the wiper wheel, g, attached to the shaft, b, of the wheel F, the above parts being arranged, substantially as shown and described.

[This is another invention in planting machines, but for corn planters exclusively, and the improvement consists in rendering the machine capable of delivering the corn into the ground at greater or less distances apart as may be desired, and also keeping the delivery spout clean by means of a plunger. The delivery is effected by means of a wheel fitting into the bottom of the hopper, and having a number of holes in its periphery which receive the seed and convey it to the spout. The axle of this wheel projects through the block, and is turned by means of a knotted band which passes round the transport wheels; these knots fit into projections at the end of the delivery wheel, by changing the position of the knots either closer or further, the corn will be sown closer or further apart.]

CORN PLANTERS—H. R. Allen, of Athens, O. : I claim the lever, J, pins K, scraper H, spring, I, and rake M, when arranged in the manner described, and in combination with the spout G, and valve V, for the purpose set forth.

TUBES FOR STEAM PRESSURE GAGES—E. H. Ashcroft, of Boston, Mass. : I claim as an improvement in pressure and vacuum gages the described tube formed by incasing one tube within another, as set forth for the purpose specified.

CUTTING FIGURES OUT OF SHEET METAL—C. P. S. Betts, of New York City : I claim the combination of the blade or shear, d, with the stationary blade or bed shear, b, made and acting substantially as specified; whereby the said shear or blade, d, acting against the shear or blade b. first perforates and then cuts the sheet of metal or other material; and this I claim whether the shear or blade, b, be made stationary or adjustable for varying the cutting angle as specified.

INSULATED TELEGRAPHIC WIRES ENCLOSED IN METALLIC TUBING.—Samuel C. Bishop, of New York City : I claim the article above described as a new manufacture, consisting of wire insulated by a covering of gutta percha or india rubber, firmly enclosed in a coating of lead or other ductile metal.

REVERSIBLE RAILROAD CAR COUPLING—Joseph Boothroyd, of Michigan City, Ind. : I do not claim merely the arrangement for obtaining play in the coupling, nor do I claim coupling by the falling pin or latch.

But I claim the device as described, by which my couplings revolve, so as to present either a bell mouth or a link, and at the same time admit of all necessary play to accommodate the motion of the cars.

MANUFACTURING VERDIGRIS—Ludwig Brumlen, of Hoboken, N. J. : I claim first, To use all these refuse liquids from chrome yellow and white lead to make verdigris of them.

Second, To use the remaining liquid from verdigris to make Paris green of.

Third, To use the remaining liquid from Paris green again for making chrome yellow.

Fourth, To use the refuse liquid from verdigris again for verdigris, in the manner described.

Fifth, I further claim the manufacture of verdigris, Paris green and chrome yellow, from the different waste liquids specified, in the manner substantiolly as described.

GAS RETORTS—Saunders Coates, of New York City : I claim forming a false bottom for gas retorts from metal of dissimilar degrees of fusibility, viz., one such as lead in combination with one such as iron, resting upon the easily fusible metal, substantially in the manner and for the purpose described.

IMPROVED WRENCH—H. M. Clark, of New Britain, Ct. : I claim as my improvement on wrenches the combination with a hook or claw griper, a, hinged to the permanent stock, and acted on by spring of a sliding rag jaw, e, having a screw adjustment on or along the permanent stock for joint and independent action, in the manner set forth.

VAPOR LAMPS—J. G. Gilbert, of New York City : I do not claim the use of cork alone, nor do I claim the outer cylinder, as they are both old devices; neither do I claim the form of the ring separately as a part of the heater or burner.

I claim the combination of the sulphur and cork, in the manner and substantially for the purposes set forth.

CORN SHELLERS—Andrew Dillman, of Plainfield, Ill.: I claim, in combination with an inclined trunk such as described, the inclined carrying apron or belt M, with its lags, f g, arranged in manner and for the purpose set forth.

SEED PLANTERS—J. W. Ells and Jas. Charlton, of Pittsburg, Pa. : We claim the combination and arrangement of the reciprocating feed slide, J, with the cut-off slats, t t, and the brush L, in the manner and for the purpose set forth.

METALLIC PACKING FOR PISTONS OF STEAM ENGINES—G. H. Corliss, of Providence, R. I. ; I am aware that springs of circular form have been employed to force out the packing rings, but such springs have in their normal condition been either straight or nearly so, and their elasticity produces merely a tendency to straighten themselves, and acts with greater force at two opposite points than at any other points of the packing ring, and these springs cannot be considered as elastic in the direction of their circumference. To the invention of such springs, however, I lay no claim.

Nor do I claim the employment of air vessels placed within the piston, in order to assist the packing thereof, as in R. A. Stratton's device, rejected in 1851.

But I claim the arrangement within a piston of the cylindrical springs D, in the manner and for the purposes su bstantially as described.

[The springs which are the subject of this patent are possessed of the following characteristics which distinguish them from the ordinary piston packing, viz., that they are elastic in the direction of their circumference, and not, as usually, in the direction of their diameter.]

MACHINE FOR DRYING GRAIN, &C.—Christian Custer, of Philadelphia, Pa. : I am aware that kilns or devices provided with drying cylinders or chambers heated artificially or by stoves have been arranged in various ways. and therefore I do not claim separately or independent of their construction and arrangement the parts shown and described.

But I claim the rotating and vertically reciprocating drying chamber, formed of the series of vessels or pans J, and guide plates K, placed on the shaft E, and constructed and arranged as shown, in combination with the furnace B, drum A, and hot air chamber D, the above parts being arranged relatively with each other, as and for the purpose set forth.

[A drum contains the grain and revolves in a furnace surrounded by a chamber of heated air, which, by its revolution and by an arrangement for moving the grain, continually exposes a fresh surface to the action of the heated air, thus thoroughly drying the whole.]

TIGHTENING TIRES OF CARRIAGE WHEELS—J. M. Dick, of Buffalo, N. Y. : I claim the combination of the wedge, E, and bolt F, or their equivalents with the fellies and tire, substantially as set forth.

MOWING MACHINES—G. C. Dolph, of West Andover, O.: I claim the lever, a, links e, sliding box g, and guides h h, with the adjusting wrist, j, when arranged as set forth, and in relation to an adjustable cutter bar as described for the purpose specified.

CARTRIDGES FOR BREECH LOADING FIRE-ARMS—J. D. Greene, of Cambridge, Mass. : I claim the described cartridge having the ball behind the powder, and a wad behind the ball, operating in the manner as set forth.

MACHINE FOR RAMMING UNDER THE CROSS TIES OF RAILROADS—R. B. Harrison, of Vicksburg, Miss. : I claim the movable machine for ramming earthy matter under the cross ties of railroads, said machine being composed of reciprocating rams and suitable actuating levers combined with a platform car, substantially as set forth.

HAND SEED PLANTERS—Joel Haines, of West Middleburg, O. : I claim the opening, w, through the standard or its equivalent, so arranged as to form a bar or scraper, substantially as described, to clear the earth or wet earth from the plunger as it is pushed down, and deliver it out through the opening, w, as described, whether the upper edge of the scraper is curved or otherwise.

STRAW CUTTERS—Porter Hill and C. E. Jones, of Millport, N. Y. : We claim the combination of the rotating knife or cutting disk H, with the series of revolving chambers, F, arranged around a central shaft or axis in such a manner that the revolutions of the same shall bring the straw in each successively between the edge of the knife and periphery of the chambers.

Second, We further claim the manner of feeding the straw to the knife by means of the eccentric, j, the permanent and movable ratchet bars, l, m, and dogs, o o′, so arranged as to crowd the straw forward only when the chamber, F, by descending is clear of the action of the knife, and also be capable of adjustment to different degrees of feed, as set forth.

ATTACHING WIRES TO BELL TELEGRAPHS—Henry Hochstrasser, of Philadelphia, Pa. : I do not claim any improvement on any machine to which the intermediate springs may be attached.

I claim the intermediate spring, or its equivalent, substantially as described.

CORN PLANTERS—D. W. Hughes, of New London, Mo. : I do not claim the two strips or bars joined together, and provided with a hopper and slide, irrespective of the peculiar arrangement of the slide and hopper, for such device, having a different arrangement of parts from that shown, was formerly patented by me.

But I claim connecting the two implements together by means of the plates, h, and bars, m, and pendent bar J, arranged as shown and described, for the purpose set forth.

[This is an improvement on a former patent, and consists in connecting the hopper and slides in such a manner that two rows of seed may be planted at the same time. In the patented device the hopper and slide were placed below the joint or pivot of the blades which carried, the one the hopper, and the other the slide; in the improvement they are placed above, and connect two implements in such a way that they work simultaneously.]

MACHINES FOR PUNCHING PAPER FILLETS FOR TRANSMITTING TELEGRAPHIC SIGNALS—John P. Humaston, of New Haven, Conn. : I claim firstly, The manner of operating the punches for perforating the characters in the paper, consisting of the revolving type wheel, or other equivalent means of indicating characters, in combination with the punches as described.

Secondly, The method of regulating the feed of paper, consisting of the graduated stop wheel, or equivalent series of stops, in combination with the type wheel, and with the means for propelling the paper fillet past the punches, as described.

Thirdly, The manner of forming the cutting ends of the punches, that is to say, having its advancing end formed into two cutting edges, by means of the V-shaped recess, in combination with a second pair of cutting edges opposite to them, formed in like manner and upon the same plate, but in position at a right angle to the first pair, thus making the other half of the shear, in conjunction with an adjoining punch, substantially in the manner set forth.

AUTOMATIC R. R. CAR BRAKE—W. R. Jackson, of Baltimore, Md. : The improved coupling described I do not claim under this application, as I have made a separate application of even date herewith for that part of the apparatus.

But I claim as my invention the mode described of controlling the action of the spring or springs which bring the brake blocks to bear upon the tread of the wheels by the operation of the tractive force, or its suspension, so that the wheels shall be free when the vehicle is being drawn forward or backed, and the brakes applied by the momentum of the train when the tractive or the backing force is withdrawn.

GRINDING MILLS—William Stauffer, of Middlebury, Ind. : I claim the combination and arrangement of the arm, a, with the arm, b, and the sliding rod, e, together with the cam, I, on the shaft, G′, the beam, J, the rod, m, the weight, f, and the connecting beam, K′, for the purpose of arresting the motion of the mill, substantially in the manner shown.

I also claim the arrangement of the cord, i, with the shaft, j, and the springs, for the purpose of ringing the bell, h, to notify the attendant when the grain is nearly run out of the hopper, substantially as herein set forth.

SHEEP-SHEARING MACHINE—J. V. Jenkins, of Jackson, Mich. : I do not claim the cutting device formed of the vibrating cutters, z, working over the stationary fingers, a, for this has been previously used.

But I claim connecting together the two shafts, F G, and also the shaft, G, to the cam shaft, H, by universal joints, the connecting joint of the shaft, F G, being provided with guards, p v, and connecting the upper end of the shaft, F, by a joint, h, to the slide, E, on the swinging bar, D, substantially as shown and described, for the purpose set forth.

[The peculiarity of this improvement on a former patent consists in the method by which the motion is communicated from the power to the cutting device, which is like that of a patent mower, and it places the whole under the command of the operator, giving him facilities for moving the shears to any part of the body while the whole is in motion.]

MACHINES FOR LASTING BOOTS AND SHOES—John Kimball, of Boston, Mass. : I claim combining the toe rest and its clamp to the attachment plate by means of an inclined rod, as described, so that both may be moved together, in order, at one and the same time, to clamp the upper to the toe of the last, and move the toe rest towards the heel post, for the purpose described.

WEAR IRON FOR CARRIAGES—I. George Lefler, of Philadelphia, Pa. : Having described my improvement and disclaiming a guard broadly, or allowing the wheels to pass partially under the body of the wagon.

I claim the peculiar construction of the metallic recess guards, B, with the flanges, a a, bearing against the bottom and sides of the body of a plain carriage or wagon, and arranged with the latter as and for the purposes set forth.

BOLT FOR SAFES—Stuart Perry, of Newport, N. Y. : I claim so combining a safety bolt with the lock of a bank, vault, store, or other door, through the means of a bar or trigger, as that the forcing of the lock by any means from the door shall trip or release the safety bolt, and allow it to securely fasten or lock said door, substantially as set forth.

SCYTHE SNATHS—Abner H. Pinney, of Columbus, O. : I claim uniting the two pieces, C E, by a branched ferrule, A B, for the purpose of making a scythe snath that shall have the proper form without being bent into that shape, and the necessary strength and rigidity to make it an economical implement, as described and set forth.

SIGNALS FOR STEAMBOATS—Albert Potts, of Philadelphia, Pa. : I claim the system of signals for steamers formed as set forth by lights mounted upon movable cranes, and rotated from the paddle wheel or propeller shaft.

WASH MIXTURES FOR WOOLENS, &C.—William Reisig, of Astoria, N. Y. : I do not claim any hard or solid soapy compound containing ammonia or soda ash.

But I claim an aqueous saponaceous composition with the alkalies in excess as described, and in about the proportions specified, for the purposes set forth.

[All yarn and wool in its raw state, contains a fatty and gummy substance, which renders it incapable of receiving a dye, so that before it can be dyed this has to be removed. This is usually done by means of a hard soap in the process called scouring, but it cannot do it effectually without great labor and expense. This invention provides a cheap aqueous solution in which the wool or yarn can be scoured, and which will cleanse it from all dirt, grease or gum in a short time, and effectually, for one of the ingredients cannot conveniently be made into a hard soap, and it is here presented to the wool in the state which it easiest acts and is acted upon, namely, the liquid. This invention is of value to all connected with woolen manufacture.]

MORTISING CHISEL—John A. Scroggs, of Burlington, Vt. : I claim my improved self-clearing mortising chisel, whose peculiarity consists mainly of its oblique grooves, which operate substantially as set forth.

LOCKS—John P. Sherwood, of Fort Edward, N. Y. : I claim the improvement in locks produced by so shaping and arranging the bolt, A, and the tumbler, B, of a lock, that the said tumbler is enabled to retain the bolt within reach of the arms, i i, on the knob shank follower, when it is used as a spring latch bolt, and also retain the said bolt in a position beyond the reach of said arms, when it is thrown outwards by the key into a position to serve as a lock bolt, substantially as set forth.

I do not claim the use of a dead latch operating directly on the locking bolt, to prevent it from being locked or unlocked by the key, as that device is well known.

But I claim the combination of the lever shank, n, with the tubular pivot, d, and the tumbler, B, in such a manner that it may be made to firmly lock the tumbler in such a position as to protect the bolt from any action of the key, and thereby prevent the locking or unlocking of the bolt, in the manner substantially as set forth.

DOOR SPRING—Edward P. Torrey and William B. Tilton, of New York City : We do not claim any of the parts separately considered.

Neither do we claim the combination of a stoppin and adjusting device applied for regulating the upright torsional rod spring, irrespective of the arrangements of said parts.

But we claim as our invention, and as a necessary auxiliary to render such adjusting device practicable and useful the arrangement of the adjusting cog wheel between the two notched ears of the bracket, and the pivoted stop plate on the face of the bracket, and in such relation to said cog wheel and the notches in the ears, that the whole operating together as specified will form a firm and substantial adjusting device for the upright torsional rod spring, as set forth.

[This door spring has the peculiarity of retaining its tension without diminution. It is simple, cheap, and convenient; will not only keep a door shut, but can also be adjusted to keep it open without changing its fixed position.]

CHURNS—Daniel E. True, of Lake Village, N. H. : I am well aware that dashers made in the form of grates, or perforated with holes, are not new, and may be found in the specifications of Enoch Thomas' and John McLaughlin's patents, therefore I do not claim their application or use.

I claim the employment (in the rocking and other churns of similar operation) of a separator, when the same is constructed, arranged and applied substantially in the manner and for the purpose herein described and set forth.

BRICK MACHINES—Stephen Ustick, of Philadelphia, Pa. : I claim the oscillating filling box, E″, with projections, c c, at its ends, in combination with the condensing mold, G, having depressions, c′ c′, at its ends, when said parts are constructed and arranged to operate in relation to each other, and in connection with the pistons, E′ and K′, as described.

BLAST FURNACE—Samuel Wilkes, of Hammondsville, O. : I do not claim the use of steam in the smelting and making of iron.

I claim the introduction and application of steam in blast furnaces at the boshes, whether at one or more points, substantially in the manner as described.

PADLOCK—Linus Yale, of Newport, N. Y. : I claim the use of the tongued and grooved sliding joint, operating in concert with the jointed stops, as described.

MANUFACTURING WOODEN WASHBOARDS—L. B. Batcheller, (assignor to West, Canfield & Co.,) of Arlington, Vt. : I claim the machine constructed, arranged and operated as substantially set forth.

WASHING MACHINES—Philip N. Woliston, of Springfield, ●. : I do not claim the tub, A, provided with a rotating, reciprocating rubber disk, for this is a well known device, and has been previously used.

Neither do I claim any particular form of cleats or rubbers, l, on the rubber disks.

But I claim the auxiliary rubber disk, E, in combination with disk, B, provided with cleats or rubbers, l, on both sides, and the cleats, l, on the bottom of the tub, A, the whole being arranged for the purpose set forth.

[Woliston's washing machine is an improvement of some ingenuity on the ordinary household tub machine. It consists in a fixed india rubber bottom to the tub, having a ribbed or corrugated surface, and another movable disk of rubber with a ribbed surface also, which is capable of being so adjusted as to wash either fine or coarse fabrics.]

SACCHARINE EVAPORATORS—Joseph Bour, of Forbach, France, (assignor to Charles Parlange, of the Parish of Point Coupee, La.) : I am aware that it is not new to cause liquids to be evaporated by the movement of surfaces into and from them, when placed in open vessels, various forms of apparatus for that purpose having before been proposed and used. In some cases the surfaces have been hollow and heated by steam internally, and in others the liquid has been heated. I mention these matters in order to state that I do not claim to evaporate liquids by such means unless the apparatus be constructed and combined according to my improvements described.

I claim the combination of a series of hollow vessels, a a, such as described, with apparatus on the interior thereof, for raising the water to, and passing it off by the central axis, and the further combination of such like surface, a a, with vessels or apparatus, e e, for raising the liquid to be evaporated, and distributing the same over the exterior of the revolving surfaces, as described.

HARVESTERS—C. M. Lufkin, of Ackworth, N. H., (assignor to Norris Lufkin, of Unity, N. H.) : I am aware that two series or sets of cutters, working one set over the other, like shears, have been previously used, and I therefore do not claim cutters thus arranged.

But I claim the combination of the cutters, n and o, with the peculiarly constructed plate, J, arranged and operating in the manner and for the purpose above set forth.

[This invention consists in the arrangement of the cutters, by which they are prevented from clogging; the sickle can be raised and lowered to suit the occasion, and the points of the cutters and fingers can be elevated or depressed, so as to avoid all obstacles which may be in its path.]

CULTIVATOR TEETH—Edmund L. Freeman, of Brownville, N. Y., (assignor to himself and J. & G. Lord & Co., of Watertown, N. Y.): I do not claim a metal casting to form a head or stay pin of the tooth.

Neither do I claim a bolt for connecting to the frame, as they have been long known and used.

I claim first, A lapped headed cultivator tooth, A, made in the manner substantially as described.

Second, A brace washer and stay pin in one piece underneath the head, substantially as described, for the purposes set forth.

PEGGING BOOTS AND SHOES—Seth D. Tripp, of Winchester, Mass., (assignor to himself and Luther Hill, of Stoneham, Mass.): I claim in machines for pegging boots and shoes (when the gate which carries the awl and driver is allowed to swing freely in a plane perpendicular to the surface of the sole, or nearly so,) the arrangement and combination of the spring, U, the disks, P, and a lever, b, with its toggle joint and connecting rod, c, and the lever, T, for the purpose of bringing down, clamping and releasing the gate, in the manner set forth.

Second, I claim the feeding pawl, b2, with the spring, C′, and slot, d2, in combination with the holding pawl or bolt, f2, operating in the manner and for the purpose substantially as described, whereby the amount of feed of the carriage, H′, is regulated, and the latter is held stationary, as set forth.

Third, I claim regulating the motion of the carriage, H′, by means of the combination of the following devices, or their substantial equivalents, viz., the groove, t2, pin, u2, dogs, x2 and y2, stops, y2 and p2, blocks, w2 and v2, and guide, z″, operating in the manner set forth.

Fourth, The combination of the devices employed, for the purpose of cutting off a portion of the pegs, and for adjusting the throw of the awl and driver to correspond therewith, or their substantial equivalents, whereby the awl and pegs are prevented from penetrating the last, as set forth.

Fifth, I claim the offsets, 1 and 2, upon the slides, w and x, operating in the manner set forth, for the purpose of causing the driver to descend over the hole made by the awl, as described.

EXTENSION GAS TUBES—Charles Monson, of New Haven, Conn. : I claim not the device of extension levers by itself, nor any particular form of tube by itself.

But I claim the combination of levers and tube or tubes, substantially as set forth.

I claim the use and application to a gas tube of jointed extension levers, like, or operating substantially upon the principle of, those I have described.

I claim the use and application thereof, as an instrument for extending the reach and contracting the reach of a gas tube, or of gas tubes, of whatever form, and for holding and guiding the same.

And finally, I claim the use of said levers as an instrument for relieving or preventing the strain of traction or of weight upon said gas tube, and upon the joints thereof, substantially as shown.

SASH LOCK—William Patton, of Towanda, Pa. : I claim in combination with the single axle, e, the self-locking hook, C, and self-acting double hook fastener, E, so arranged as to act independently of each other, and so that they may be shifted on said axle to form a right or left hand catch, as set forth.

MACHINE FOR FORGING NUTS—Edward Pay and Saml. Hall, of New York City : We claim the hammering apparatus as described, in combination with the punch, I, and the punch, L2, arranged and operating in the manner set forth, for making nuts, substantially as described.

RE-ISSUE.

COMPOSITIONS FOR ROOFING—James West, of Syracuse, N. Y. : I claim the use of lime in combination with the rubber or gutta percha and shellac solutions in the composition as set forth, and for the purpose specified.

DESIGNS.

TYPE—George Bruce, of New York City.

SAD-IRON STOVE—S. W. Gibbs, (assignor to Winne & Abeel,) of Albany, N. Y.

STOVES—Garrettson Smith, Henry Brown and Samuel H. Sailor, (assignors to J. G. Abbott and A. Lawrence,) of Philadelphia, Pa.

Correction.

In a recent notice of the launch of a steamboat designed for propulsion by side screw propellers, under Capt. Whitaker's patent, we stated the length of the vessel to be 110 feet. Our figures were wrong. It should have been 210 feet, a very material difference. There is every prospect that this enterprise will prove successful. The "elements" for success are of the right sort.

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Compressed Air Baths.

MESSRS. EDITORS:—In No. 48, last volume, of your esteemed paper, I notice an article, by Dr. Taylor, of New York, strongly recommending the use of a compressed air bath. Although my professional duties hardly allow me time at present to review this article, still the high regard which I entertain for your widely-circulated paper prompts me to offer a few remarks on the subject. I will endeavor to be as brief as possible.

Before entering into particulars, I will state a few cardinal principles in regard to consumption, which will aid us in discussing the subject of the compressed air bath.

Consumption is usually preceded by a deranged state of the general health, and the tubercular deposit is restricted within more or less circumscribed limits. The chief thing to be apprehended is, not the existence of tubercles in a circumscribed portion of the lungs—since experience has proved that these bodies may remain in a crude state for a long period without any serious detriment to the health, that they may be absorbed, may undergo the cretaceous transformation, or be expelled after the process of softening—but rather the persistence of the tuberculous diathesis, which gives rise to successive depositions of the morbid product. A remedy, then, should be prescribed for the diathesis, or the cachectic part of the system, and not for its local manifestations.

Cases of phthisis frequently originate in painful moral impressions, which act by undermining the general health.

Tubercular cachexy is also induced by want of action in the skin. The skin is the second respiratory organ.

Dr. T. would cure consumption by forcing air into lungs which he supposes to be one-third unfit for action in consequence of tubercles arising from congestion or inflammation; he entirely overlooks the fact that there are more powerful agents at work than congestion or inflammation to produce this fearful disease. If, as he asserts, air is the great essential, then pulmonary consumption could soon be arrested on the summit of the Alps; but this has never been the case. He ought to know that respiration is very easy on Mt. St. Gothard. But this is not all. *Uniform pressure* of air is one great requisite to the cure of consumptive patients; but how he can effect this by first placing his patients in an air bath, and afterwards exposing them to the (not particularly condensed) air of a hot July day in New York, I cannot tell. Far from "husbanding the powers of life," he only wastes them.

Again, what constituents of air does Dr. T. prefer?—oxygen, nitrogen or carbon? He gives us no clue to this, except that he winds up his treatise by saying that the "compressed air bath will doubtless prove an available and efficient means of arterializing the blood," &c. It appears, then, that Dr. T. wants oxygen!

But an atmosphere, to be wholesome for tuberculous patients—aye, indispensable to their cure—must have a predominance of nitrogen or carbon, with little oxygen, besides being impregnated with salt.

Does Dr. T., in his air bath, meet these conditions? No, by no means! He will rather injure than benefit the health of those who are credulous enough to confide in the air bath; he may, perhaps, cure an imaginary, but never a pulmonary consumption.

As my time and space are limited, I will only give a few proofs of my assertion, from the many which might be adduced.

1. Experience teaches that a residence near salt works, and the inhalation of the air with the vapor from the boiling pans, have often prevented and even cured consumption. M. Sibert, who lived several years at Bex, near the lake of Geneva, where there are extensive salt works, remarks that he never knew a laborer employed there become consumptive.

2. Heat has no effect upon tuberculous cachexy, as it is found alike in the temperate, frigid and torrid zones; but this disease has been seldom or *never* observed in *Iceland*, in the windy isles of *Faroe*, in the isles of *Feejees*, in the *South Sea*, or in the *desert* surrounding *Oxenburg*, inhabited by the *Kirgesen*, who are entirely exempt from it.

The atmosphere of Iceland is far from pure; it is partly affected by the odors of decaying animal substances, which lie in front of the houses, and it is also more or less impregnated with particles of salt, which the sea breezes here always carry along with them, and often in such large quantities that, if a storm has blown from the east only for a few hours upon Westmannoe, the windows will be so completely covered with crystallizations of salt that one can hardly see through them. The air is seldom clear, generally damp, and the sky cloudy. This is the climate of Iceland, where no pulmonary consumption occurs, notwithstanding the long winter, and although the air is impregnated with particles of salt, agitated by violent winds, and infected with decaying substances, and where (as we see by the medical literature) they intend to erect hospitals for tuberculous persons.

The atmosphere of the Isles of Faroe is likewise impure, containing, like that of Iceland, many particles of salt, which will cover the face with a thick incrustation if exposed in a boat, even if there be no wind to dash about the spray and foam. The air is less clear than that of Iceland, the sky generally cloudy, and a clear, serene sky is a great rarity. So much for the Isles of Faroe, which are also free from consumption.

The descent of the Kirgesen surrounding Oxenburg is traversed by a broad, sandy road, called *Rynpeski*. These Rynpeski are surrounded on all sides by a number of large and small ponds and puddles of salt, which substance abounds to such an extent that fresh water can only be found there in the spring, and at high-water mark; at all other times these ponds contain salt water. When any of them dry up, a stratum of salt, of various degrees of thickness, always remains.

Does not Nature here seem to indicate the most effectual way for healing tubercles?

I would recommend to Dr. T. the perusal of a memoir of Dr. Tales Girons, (*Revue Medicale*, 1856—Tome II.,) in which he proposes to the Academy of Sciences the erection of a *fontaine* in a saloon, by whose small jets of water the patients might enjoy the uniform atmosphere of an artificial sea air. Such a proceeding would at least be more scientific, and perhaps of a more beneficial nature.

G. GLEIWITZ, M. D.

Stratford, Conn., Sept., 1857.

A Cheap Barometer for Farmers.

MESSRS. EDITORS—The barometer is a very important instrument to the navigator, as an indicator of the weather, but it is too expensive an article to come into general use among farmers. Those, however, who cannot afford to purchase a mercurial barometer, can, in a few minutes, construct a measurer, which, for common observations, will answer every purpose of a more expensive instrument. The instrument now to be described, though very rude and simple in construction, can be made extremely sensitive, so that the least change in the weight of the atmosphere will be indicated by it. It consists of a very light scale beam, to the shorter arm of which is suspended some light bulky substance, of sufficient weight to balance the longer arm. The beam may be three feet in length, two-tenths of an inch wide at one end, and tapering to a point at the other. Eight or ten inches from the wider end, run through a knife blade for a fulcrum. Into the end of the shorter arm insert a small hook, or bent wire, to which, by means of a thread, suspend a block of very light wood, a bundle of paper, a large piece of cork, an inflated bladder, a pasteboard box made air-tight, or, what is still better, a tin can with the opening closed, to prevent any ingress or egress of air. A small leaden weight may be attached, if necessary, to the longer arm, to balance the more bulky one on the shorter arm. Let the knife edge rest upon some hard, firm support, after the manner of a scale beam. Next prepare a scale of equal parts, twenty inches or more in length, divided into inches and tenths of an inch, which suspend perpendicularly at the end of the longer arm or index. The rising of the index indicates change, or rain; its falling, fair weather. If during the changes of the weather, the index describes too large an arc, lower the center of gravity by attaching a small weight to the under side of the beam near the fulcrum. When the instrument is first set up, it will probably need regulating. If it be set up on a rainy day, and the beam be placed horizontal, the first succeeding fair day will cause the index to descend too low; or, if put in operation on a fine day, the first rainy day will cause it to rise too high. By observing its movements through several successive changes, it will be easy to ascertain the length of arc described by the index; and by means of the small weight on the long arm, it may be so regulated that the arcs above and below the horizontal of the beam may be the same. Let the instrument be placed in the cellar, or some place where it will be the least affected by wind or temperature.

The barometer above described, after a trial of several weeks, has proved to be a faithful indicator of atmospheric changes, and a true prognosticator of storms. J. H. P.

September, 1857.

[No barometer is a perfectly reliable indicator of the weather; but the described device, if constructed with tolerable skill and delicacy, will probably indicate all that the mercurial barometer can, i. e., the condition of the atmosphere with regard to its pressure. The action of this cheap barometer depends on the fact that all substances are partially buoyed up by the air, and that this buoyancy fluctuates with the changes of pressure. Were the material at the two ends of the lever of equal specific gravities, no motion would result from any change of pressure, however great, in the surrounding air; but as that at the small end is lead, and at the other a bladder, an empty bottle, or light wood, it follows that the change of buoyancy due to a change of pressure in the air, is most sensibly felt by the light body, and the equilibrium which was before perfect becomes disturbed, and the lever assumes an inclined position, the end loaded with lead rising as the air becomes lighter, and sinking as it becomes denser.

Curious Report Down South.

MESSRS. EDITORS—I enclose you $28, and a list of twenty subscribers, which I hope will come safely to hand.

You doubtless will think the above list quite a falling off from that sent last year. I have not got the time to hunt them up, and then I find to my surprise the notion prevailing here that the SCIENTIFIC AMERICAN has passed into the hands of the proprietors of the Novelty Works in New York city, and will be used for their benefit, hence will not be as useful to others as formerly—a *novel* idea certainly. What started the report, or where it originated, I cannot tell; but I have taken the liberty to pronounce it false. R. N.

Athens, Ga., Aug. 27, 1857.

Note.—We thank our friend for the generous list of subscribers to our paper, and we beg to assure him and all others who can possibly take an interest in the matter, that the "notion" he announces as prevailing in Athens, that the SCIENTIFIC AMERICAN has passed into the hands of the proprietors of the Novelty Works is wholly false. It is probably sufficient for us to say on this point, that the proprietors of this journal do not enjoy a speaking acquaintance with either of the proprietors of the Novelty Works; therefore the bond of interest cannot be remarkably strong between us and the parties named. The SCIENTIFIC AMERICAN is the organ of no person, no firm, no institution, on the face of the earth. It is independent of all outside influence, and no living person has any control over its columns except the three members of the firm of Messrs. Munn & Co.

When we decide to yield the influence of our journal to the control of outsiders, it will not make much difference to us who gets hold of it. For the present, however, we intend to manage it as we have hitherto done for the past twelve years.

Tempering Tools.

MESSRS. EDITORS—In regard to the best process of hardening and tempering cast steel tools, I am much obliged for your corrections. That mere fresh water is the best medium, and that the surest, best determined temper for the generality of cutting tools, is obtained by its use, is practically demonstrated in the largest cutlery establishments in England and France; but it is singular that I have never seen it mentioned as an indisputable fact, that if cast steel is overheated either in forging or in the operation of hardening, that no subsequent treatment can restore its cohesive power. Blacksmiths, if you only attend to this, you can make good tools of any kind, even razors and penknives. H. Z.

Bloomsburg, Pa., September, 1857.

Artificial Marble.

Last week we mentioned that M. Felix Abate, of Naples, had recently discovered a method of rendering plaster of Paris as hard as marble, and of rendering it susceptible of receiving a beautiful polish. We now give the process in full:—He places the plaster in a drum turning horizontally on its axis, and admits steam from a steam boiler; by this means the plaster is made to absorb in a short space of time the desired quantity of moisture, which can be regulated with the greatest precision. With plaster thus prepared, and which always preserves its pulverulent state, he fills suitable molds, and submits the whole for a short time to the action of an hydraulic press. When taken out of the molds, the articles are ready for use. This process is simple and economical, the cost of the manufacture very little exceeding that of the material. The plaster thus prepared is perfectly hard and compact, taking the polish of marble. The most delicate bas-reliefs and highly finished medals may be produced from it with the same perfection as they have in the original. An experience of three years has shown that productions obtained by this process resist the most unfavorable atmospheric influences; it can therefore be employed as well for works in the open air as for the interior of buildings.

Dyeing Wools and Woolens.

R. A. Brooman, of the London *Mechanics' Magazine*, has secured a patent for a composition intended to be used in dyeing wools and woolens as a substitute for tartaric acid, cream of tartar, and argol. The patentee prepares stannic chloride by mixing about $1\frac{3}{4}$ oz. of bay salt, $8\frac{3}{4}$ lbs. muriatic acid, $2\frac{1}{4}$ lbs. nitric acid, and dissolves tin in the liquid thus obtained. The composition for dyeing is manufactured by dissolving one part of oxalic acid in ten parts of hot water. It is then stirred. One part of the stannic chloride is next dissolved in ten parts of cold water, and then stirred. He then adds, for every part of the stannic chloride, two parts of sulphuric acid, stirs again, and when the two solutions are cold, mixes them together, stirs and leaves them to settle for about twenty hours before using.

Extracting Coloring Matter.

L. P. Kerdyk, of England, has invented an apparatus for extracting coloring matters, which consists in an interior case or chamber covered with wire cloth and perforated plates, &c., and revolving at a high velocity, inclosed in an exterior chamber or case. The pulverized wood or root is placed in the internal chamber, and rotary motion being imparted thereto, water is introduced, being driven or filtered out by centrifugal force through the sides of the case, and the insoluble matter remaining behind is removed when requisite. The liquid thus separated may be passed into the dye, and out through the machine again, and so on, as often as necessary, until the color is sufficiently extracted from the roots.

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New Inventions.

Witherell's Monkey Wrench.

The accompanying cut represents a very convenient wrench, patented by O. O. Witherell, of Danville, N. H., on the 2d of December last. It is capable of assuming either the novel condition in which it is represented serving as a fork wrench, or of being changed to the general form of an ordinary screw wrench.

A is the handle, and B the shank fixed thereon. C is a spring riveted to one side of B. D is a crooked lever influenced by the spring, but which can be readily operated by the thumb. E is what may, but with ques-

tionable propriety, be termed the fixed jaw. F is a pin, by which E is secured to B. G is the movable jaw, and G′ a sufficiently long rectangular shank, which passes freely through a corresponding opening in E. The lever, D, is urged by the spring, C, into such position that it pinches and holds the shank, G′, very firmly in its position.

In order to change the wrench to the form of an ordinary one, in which the jaws, E and G, project from the side, it is simply necessary to apply the thumb to D, and remove the part G altogether, after which the jaw, E, may be turned quarter of a revolution on the pin, F, and G again inserted. The space between E and G may also be increased and diminished at pleasure after simply depressing D.

For further particulars the inventor may be addressed as above.

Improved Hominy Machine.

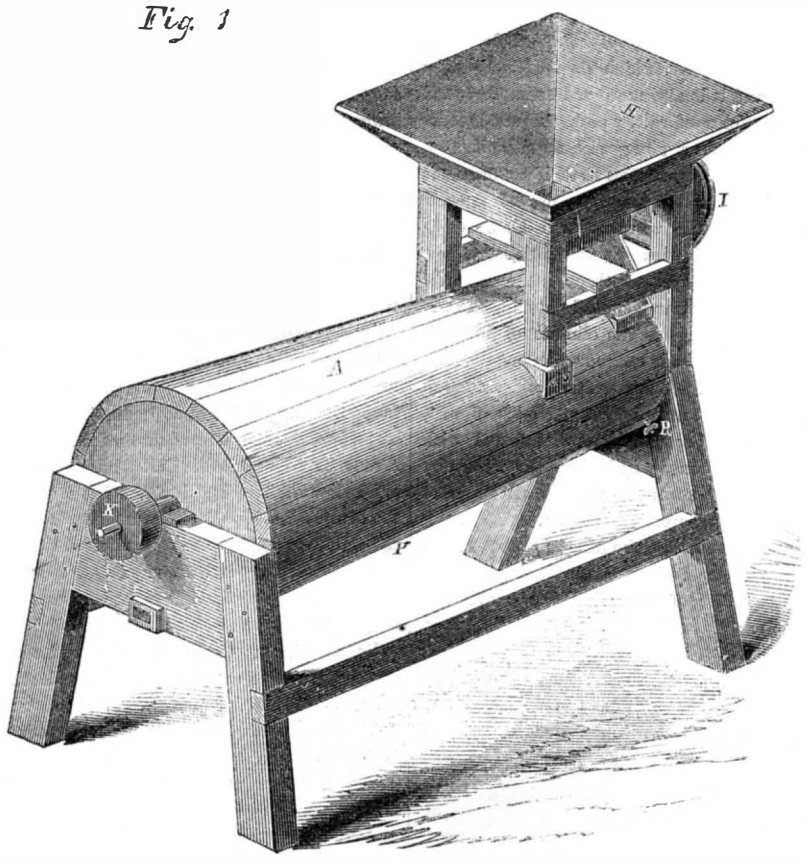
Hominy is a favorite dish with many, especially in the Western and Southern States, and a simple machine which will hull and clean the corn without breaking or mashing the grains is a valuable invention. The invention here represented does this with such perfection that the dish of hominy, when properly cooked, much resembles the white swelled surfaces of nicely prepared pop corn.

The grains are fed into the small end of an horizontal and slightly conical case, on the interior of which is rapidly revolving a drum of somewhat smaller diameter. The drum is covered with projections or beaters, and the interior of the case is provided with nearly continuous rings extending inward nearly or quite to the surface of the drum. The grains under the action of the beaters, and aided by gravity, gradually work through the space provided by the want of continuity of the rings, and finally escape thoroughly hulled at the large end of the machine.

Fig. 1 is a perspective view of the machine complete; Fig. 2 a longitudinal section, and Fig. 3 a transverse section of the important

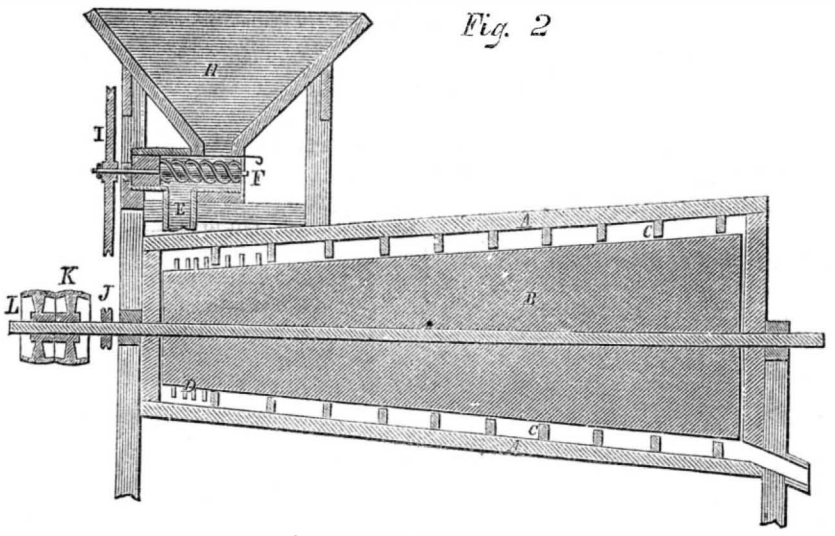
MAYHEW'S HOMINY MACHINE.

Fig. 1



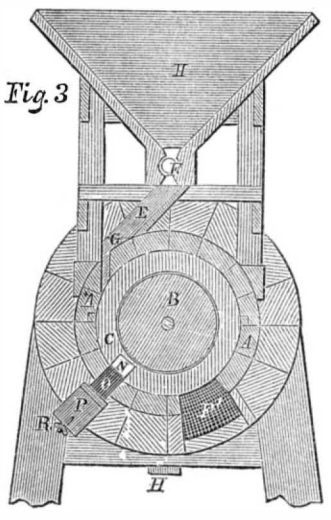
parts. A is the case or concave which may be of wood in either one or two thicknesses lined with metal. B is the drum or conical "cylinder," and C the rings fixed in A N. Fig. 3 shows the opening in C through which the grain finds its way at a proper rate, regulated by means explained below. D represents the pegs or beaters which are only shown

Fig. 2



and loose pullies on the shaft of B, by which it is driven. F′ is a screen through which any dust may be discharged. P represents an

Fig. 3



adjustable strip let into the lower side of the case A, and on which are fixed plates O, so that when P is raised by the thumb screws, R, to its highest position, the plates O nearly or at the small end of B, but which are distributed over its whole surface except at those parts opposite the rings C. E is the receiving spout, F a feed screw, for which may be substituted the common shoe and damsel, if preferred. H is the hopper, I the pulley by which F is turned, J the pulley which imparts motion to I by a belt, and K and L are fast

quite stop all the openings, N, in the rings C. By lowering P to the proper extent, the grain may be allowed to pass from the small to the large end of the machine as rapidly as may be desired.

This invention was patented on the 2d of June last. For further information, address the patentees, Messrs. Weeks & Mayhew, Indianapolis, Ind.

Treatment of Gutta Percha.

E. Rider, has made a new improvement in the treatment of gutta percha, by the addition to sixty-six parts of that gum, of one part of sulphur; and one part of litharge, prior to the exposure of the same to the action of from 235° to 245° Fah. for the purpose of expelling the volatilizable ingredients therefrom, and the after process of vulcanization of gum so prepared by subjecting the same to a heat of from 255° to 265° Fah.

M. Doyere, of Paris, has proposed a method of keeping grain sweet and undecomposed for any length of time, by subjecting it to the action of the vapors of a volatile liquid called the bi-sulphide of carbon.

American Ingenuity.

Last week we published a list of five cases for which petitions are now before the Patent Office, asking that certain patents may be extended for a period of seven years. By reference to the last number of the 12th volume of the Scientific American, it will be seen that twenty-six patents were extended during the past year; thus showing that, although many inventions prove unprofitable, and oftentimes, perhaps, for want of proper management, involve their originators in a complication of disasters, yet, in a majority of cases, we are inclined to think that the patentee either parts with his right for a snug sum of money, or engages in the manufacture and sale of his improvement, and thereby secures for himself not only a good, but also a profitable and permanent business.

The fact that so many patentees are always anxious to get their patents extended, goes to strengthen the position we have assumed, that patented inventions are not by any means so generally unprofitable as many suppose. A cotemporary justly remarks, that notwithstanding a prevalent opinion to the contrary, so "many inventors have acquired ample fortunes by their science, skill and intellect, that every poor man with a taste for mechanics hopes to meet with equal good luck. The earliest inventors undoubtedly had rather a hard time of it, but they were few in number; however, they must be honorably regarded as pioneers. Still, even in the infancy of discovery, many able men were amply repaid for their toil, not only in honor, but in hard cash; and in these times, the originator of a labor-saving or money-saving machine of merit—a machine which does really save labor and money, and actually reduces the cost of social necessaries—is pretty sure, if he be decently prudent, of liberal compensation for his pains. Most prominent inventions of a thoroughly useful character, made in this country, have amply repaid their originators, whether they were those of a self-acting mule, a revolving pistol, a carpet-loom, a coal-burning locomotive, a reaping machine, or a rotary press. This fact undoubtedly stimulates ingenuity, but this will not alone account for the requisition which this country makes upon its inventive talent. It is because we have an immense demand for manufactured cotton, that we have brought the machinery necessary for its production to perfection; and it is because we have great crops, defying the profitable use of the scythe or sickle, that we have the beautiful machines which now so wonderfully facilitate the operations of agriculture."

The statistics of the Patent Office alone show something more than that we are merely an ingenious, contriving set of whittlers and jack-knife adepts. It is true, however, that there is always a class of more or less really ingenious men, who are continually racking their brains to construct "perpetual motions," "flying machines," and inventions of like character, without the slightest probability of success, when, if the same amount of time was spent in scheming out useful improvements, such men would undoubtedly accomplish some good object for themselves, and confer an equal benefit upon the community.

The Awards for Reaping Machines.

The following are the awards for the reaping machines at the trial at Syracuse in July last:—C. H. McCormick, Chicago, gold medal; Walter A. Wood, Hoosic Falls, N. Y., silver medal; Warden, Brokaw & Child, Springfield, Ohio, bronze medal; and Jonathan Haines, Pekin, Ill., diploma.

For reapers and mowers combined, the following awards were made:—Walter A. Wood, Hoosic Falls, N. Y., gold medal; Dan. Osborne, Buffalo, silver medal; Warden, Brokaw & Child, bronze medal.

The awards for mowing machines have not yet been made.

Judge Curtis has resigned his seat as one of the Justices of the United States Supreme Court. He is an able lawyer, and well versed in the knowledge and practice of the patent law.

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Scientific American.

NEW YORK, SEPTEMBER 19, 1857.

Important Facts Concerning the Telegraph Cable—Letter from Professor Morse.

The New York *Observer* publishes a letter from Professor Morse, the Father of Magnetic Telegraphs, who was on board of the *Niagara* at the time the cable parted. He lays the blame of the accident directly upon the engineer, Mr. Bright, while that gentleman transfers it with equal directness to "the mechanic" who, he says, was temporarily left in charge of the brakes. Professor Morse says:—

"At 3·45 in the morning, lat. 52° 30″, long. 17° 30″, Mr. Bright, the engineer, went on deck; our ship was going at the rate of four miles two fathoms per hour, and the cable running out at a greater speed, perhaps at the rate of five miles an hour. Mr. Bright spoke to the man in charge of the brakes, asking him what strain was upon the cable, to which the answer was returned, about "3000 pounds." Mr. Bright directed him to put 100 pounds of more force upon the brakes, to check the speed of the cable. This was demurred to by the man for a moment, who expressed a fear that it would not be prudent. Mr. Bright, however, *persevered in his orders.* The brakes were applied with the additional force, which suddenly stopped the wheels of the paying-out apparatus, and of course brought the force of the unchecked speed of the ship as an addition to the strain. At this time, too, there was a moderately heavy sea, which caused the ship's stern to rise several feet, and to the same degree to fall; when the stern fell, the cable, under its immense strain, went down into the water easily and quickly, but when the stern was lifted by the irresistible power of the succeeding wave, the force exerted upon the cable, under such circumstances, would have parted a cable of four times the strength. Hence it is no wonder that our cable, subjected to such a tremendous and unnatural strain, should snap like a pack-thread. It did snap, and in an instant the whole course and plan of our future proceedings were of necessity changed. How many visions of wealth, of fame, and of pleasure were dependent for their realization on the integrity of that little nerve-thread, spinning out like a spider's web from the stern of our noble ship, and (in view of the mighty force of steam, and waves, and winds, and mechanism, brought to bear upon it,) quite as frail! Yet, with all its frailness, nothing could exceed the beauty of its quiet passage to its ocean bed, from the moment we had joined it to the shore end *until the fatal mistake of Mr. Bright,* which caused the breaking of it asunder. The effect on ship-board was very striking. It parted just before daylight. All hands rushed to the deck, but there was no confusion; the telegraph machinery had stopped; the men gathered in mournful groups, and their tones were as sad, and voices as low, as if a death had occurred on board. I believe there was not a man in the ship who did not feel really as melancholy as if a comrade had been lost overboard."

If Professor Morse's statement is correct, Mr. Bright is evidently not bright enough to lay a telegraph cable. This *fatal mistake,* taken in connection with other blunders, such as the acknowledged unsuitableness of the paying-out machinery, the wrong twisting of a portion of the cable, the first breakage of the cable soon after starting, when two miles out from shore, and the want of sufficient intelligent asssistance to pay out the wire on board the *Niagara*—these things seem justly attributable to the want of capacity in the superintending engineer. We have no doubt that Mr. Bright did the best he knew how. But he does not seem to have possessed the capacity to manage an enterprise of this magnitude. We trust he may be able to show that he was not at fault in the matter.

Professor Morse makes another most important statement in regard to the cable. He says:—

"We got an electric current through till the moment of parting, so that the electric connection was perfect; *and yet the further we paid out the feebler were the currents,* indicating a difficulty, which, however, I do not consider serious, while it is of a nature to require attentive investigation."

We believe that in all of the published official statements the company have not intimated that there was the least difficulty in the electrical transmission. On the contrary, the public have been led to understand that the whole experience gained in this attempt at laying the cable, tended to demonstrate the certainty of final success.

But Professor Morse, with a candor which all must admire, admits the existence of a difficulty of a very serious character, and one which all the glorification of the company cannot remove. If the electric current *grew weaker and weaker* during the paying out of the first 384 miles of the cable, how strong or how rapid is it probable that the transmission would have been after paying out 2,000 miles?

How to Make Oil of Vitriol.

The thousand and one uses to which oil of vitriol, or sulphuric acid, is put in this and all countries, cannot fail to render some account of it interesting to every one of our readers. First, then, what is sulphuric acid? Chemically it is a compound consisting of one equivalent of sulphur and three of oxygen, and is written SO^3. Some chemists, however, hold the theory that there can be no acid without the presence of hydrogen, and from all experiment this idea seems to be the correct one, and they write it HSO^4, i. e., one equivalent of SO^3 combined with one equivalent of water, which is a compound in equal proportions of hydrogen and oxygen, and is written HO.; and, moreover, as the compound SO_3 has never been obtained in any but the gaseous state, and then it exerts no acid reaction, HSO^4 or SO^3–HO is the received symbol for oil of vitriol. Its physical properties are a yellowish white, oily-looking liquid, having a strong acid taste and smell, capable of mixing with water, and has a specific gravity of 1-9. The chief uses are the solution of indigo and the manufacture of various chemical salts, and the method of manufacturing it is as follows:—In the United States, where pure sulphur is comparatively cheap, it is burnt in large kilns, and the result of this combustion is a gas called sulphurous acid, having the composition SO^2, and this is conducted into large leaden chambers, where it meets with a jet of steam and a quantity of nitric acid in the gaseous state, from which it takes up one equivalent of oxygen and falls down to the bottom of the chamber as liquid sulphuric acid, having a specific gravity of about 1-2 (having obtained the water from the steam); it has then to be concentrated by evaporation in either leaden or platina vessels to the required strength. The nitric acid gas is obtained by heating together a quantity of common nitre or nitrate of potash with sulphuric acid, and the nitrous gas is given off, while the sulphate of potash remains, which is chiefly used in medicine.

This is a brief outline of the manufacture as it is generally described; but practice has rendered some important changes necessary to produce it at a price sufficiently low for the consumer, and in England this cheapening process has been carried to a still greater extent. In the great districts of the chemical works—namely, in and around St. Helens in Lancashire, and Birmingham—the method is as follows:—In consequence of the dearness of pure sulphur, some compound which would burn easily and was cheap and in abundance, had to be obtained, and this was readily done in that class of minerals known as pyrites, which are a compound of some metal (usually iron or copper) and sulphur, and contain from 30 to 60 per cent. of the latter, and as this is very abundant in almost all parts of the world, and hitherto of no use, it proved to be the very thing required, so that by a slight modification in the construction of the kilns or furnaces, it was found to burn as well as pure sulphur, and has consequently been used ever since. Certain precautions in the regulation of the draft have to be taken to prevent it from fusing and caking into a cinder, which would of course stop the combustion. The gas which is the result of this is the same as in the case of pure sulphur, and is treated the same way. There is, however, a mass of matter left in the kiln which needs to be cleared out, viz.: the pyrites, now no longer useless compounds of sulphur with iron and copper, but oxides of those metals, ready at once for the further processes of the smelter, and in many instances the copper which is extracted from these burnt pyrites pays for the manufacture of vitriol. Another change is that nitrate of soda is used, or, as it is called, soda-niter, which is imported from South America, as it is much cheaper than the potash-niter, it being worth about $4 per cwt. in England, and the potash more than twice that sum. The result is the same, namely, nitrous gas, which is conveyed into the lead chamber with the sulphurous gas and a residue of sulphate of soda, which is used in making soda-ash. The part which nitrous gas plays in the chemical changes from sulphurous to sulphuric acid is as yet scarcely understood, but it is supposed to be but a kind of transferring action, or, in plain terms, that it is the commission agent between the moist air in the chamber which has oxygen to spare and the sulphurous acid that is in want of oxygen. The idea is that it undergoes no real change itself, but is continually giving up oxygen to the acid and taking it from the air. Experience, however, shows that this is not true, for if the continual supply of a small portion of fresh nitrous gas is not furnished, it becomes robbed of all its oxygen and the process stops; so that our opinion is that it exerts not only a transferring and carrying action, but also a very powerful chemical action when present in exactly the right quantity, which can only be understood by long experience in the manufacture.

There are many points to be noted in the various processes, which need only be mentioned to show that we are not unmindful of them; but nothing short of practice can of course familiarize them to the inquirer: the regulation of the draft to the kilns, the depth of the fire in the kilns, the color of the gases in the lead chamber, and the specific gravity of the liquid at various stages of the process, which, by the way, is a continuous one. This is a general and cursory description of the manufacture of oil of vitriol, and of course has only given a general and popular description of the process.

The New Commissioner of Patents.

We announced in our last number that Joseph Holt, Esq., of Kentucky, was tendered the office of Commissioner of Patents, and promptly declined it. It now appears that he has reconsidered the matter, and finally accepted the appointment. He entered at once upon the discharge of his duties, and is now busy in making himself acquainted with the details of his new position. Mr. Holt is a lawyer, and for many years practised his profession in Mississippi, where he distinguished himself, and took rank with Prentiss, McNutt and others. He was at one time Prosecuting Attorney, but has never, we believe, held any other public office. He is a brother-in-law of Senators Yulee and Wright.

It is stated in one of the daily papers that Mr. Holt contemplates several removals among the Examining Corps. We think, however, that this announcement is premature, as we presume he has not had time even to consider this matter at all, and will not, until he shall have become better acquainted with the details of his office. At the proper time, no doubt, he will be called upon to inquire into the fitness of some of the examiners, as there is an urgent necessity that this should be done.

We shall probably recur to this subject again, but at present we have no desire to disturb the new Commissioner with any matters which may in any degree interfere with his expressed determination to become master of his new duties.

We cordially wish Mr. Holt success, and shall take pleasure in extending to him every possible aid in our power, in his endeavors to make the Office more and more the nursery and protector of American genius. To do this successfully, Mr. Holt must be *the* Commissioner of Patents, and not permit himself to be wheedled into the notions and whims of examiners or officious patent agents.

It was one of the peculiarities of Judge Mason that he patiently listened to suggestions from all, without permitting himself to be unduly influenced by them. If, "in the multitude of counsel there is wisdom," so also is there mischief, if visionary theorists and impracticable schemers are permitted to gain their ends.

Epidemic in the Money Market.

There seems to be just now a somewhat anxious panic in reference to money matters. The failure of a "trust company" and a few banks of a minor character has scattered dismay and confusion into business circles. The public mind is excited, and a general distrust seems to have seized upon the people, which, epidemic-like, must have its course.

Confidence being the main-spring of all business transactions, we could no more succeed without it than could an army destitute of munitions, conquer a well equipped enemy. From present appearances, the worst is over, and we hope within a few days to see the financial machinery once more in gear, and working with its accustomed steadiness. In the face of such immense crops as have been garnered, there need be no real cause for alarm or distress. It is unfortunate that the ruinous effects of these financial excitements fall most disastrously upon those who are least able to bear them, and who have had least to do in bringing them about.

We continue, as usual, to receive bills on any of the solvent banks, North, South, East and West, in payment for subscriptions. Our friends everywhere seem to be working nobly for their favorite paper, and we hope to increase our subscription list five thousand at least. We have commenced the volume with a much larger edition than usual, and hope to continue it to its close, so that all new subscribers may get the numbers from the commencement.

On the 1st of January next we shall disburse One Thousand Five Hundred Dollars in cash to the orders of the successful competitors for our premiums, as announced in our Prospectus.

Fire-proof Dresses.

Many ladies have been burnt to death by their light gauze and cambric dresses taking fire and blazing up before there was time to extinguish the flame. Actresses and *danseuses* are most liable to this, and the talented Clara Webster and others lost their lives this way. It ought, therefore, to be generally known that by steeping the dress, or material composing it, in a diluted solution of chloride of zinc, it will be rendered perfectly fire-proof. Our manufacturers should take the hint.

The Fair of the American Institute opened on the 15th inst. at the Crystal Palace. It is worth a visit from all, and we hope there will be a successful run of *quarters* into its receiving till. We shall commence our reports next week.

A submarine telegraph cable of 150 miles in length is being laid from Cagliari, on the Sardinian coast, to Bona, on the coast of Africa, thus making Europe in electrical *rapport* with the islands of the Mediterranean and the continent of Africa.

It is a common mistake to call electricity a fluid. It is not a fluid, for with that we connect the idea of matter, and as electricity is not matter, the proper term is electrical force.

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Feats of Fire-arms.

We have received a second interesting account of the results of other experiments with breech-loading fire-arms, recently made at West Point, N. Y. Our correspondent's *resume* runs thus:—

"Next came Mr. Soule's gun. It was either a chamber or a breech-loader. A section of the bore of this gun, slightly enlarged, slid vertically down, received its cartridge from behind and beneath, and then sliding up again to its place, cut off the rear of the cartridge. As might have been expected, it did not do good shooting, and *fouled* from escape of gas both before and behind the section.

The next competitor was Dr. Maynard, of Washington, the inventor of "Maynard's primer." His gun was a neat little piece of six pounds weight, but of under caliber. He tilted up the breech of the barrel, put in a metal cartridge, and lowered the breech to its place again. The shooting was only tolerable.

Lieut. Symmes' gun came next. It is a breech-loader. He drops a piece downward around a loose hinge under the breech of the barrel, puts the cartridge into the barrel, and forces it up to its place by again closing up the swinging piece. This swinging piece contains a plunger-hammer and a spiral wire spring and screw behind, to feed up as it wears. This plunger strikes the cap, and the fire passes through a straight canal to the charge; that canal closing against any escape of gas afterwards. The plunger is managed by a projection within the guard. Of course it has no lock. It was first fired on Thursday (3d), but owing to the failure of the clutch which holds up the breech, the firing was renewed after repair, next day. The firing was first-rate, being the best next to Colt.

Thus far, then, in the order of merit, the breech-loaders stand as follows: 1st, Symmes; 2d, Gibbs; 3d, Sharp's Co., &c. It is probable that one or two more guns may yet be tried before the Board, but they are inconsiderable. The Board have authority to visit Springfield Armory, and other private armories, &c., and next week they will do so." †

In addition to the above we have also been furnished with the official list of names of competitors, written in the order in which their arms were to be submitted, as set down by the War Department.

1. John F. Sherman.
2. J. C. Symmes.
3. H. Gross.
4. George W. Morse.
5. Samuel Colt.
6. John P. Schenkl.
7. L. H. Gibbs.
8. George Patten.
9. R. V. Dewitt.
10. Hoe & Co. for G. Smith.
11. A. V. Hofer.
12. William C. Freeman.
13. Merrill, Lathrope & Co.
14. C. Sharps & Co.
15. Jacob Stow.
16. A. E. Burnsides.
17. Lemuel Wells.
18. Sharpe's Rifle Co.

Several of the above inventions were patented in this country and in Europe through our Patent Agency, and have also been illustrated in the SCIENTIFIC AMERICAN.

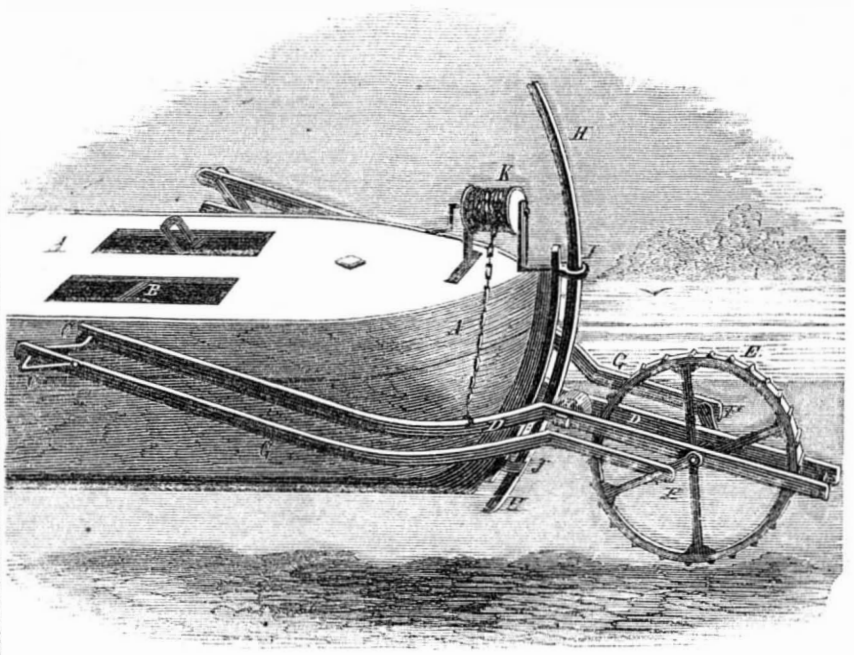
The number and celebrity of the competitors, the superior quality and great ingenuity of the guns, the acknowledged competency of the military judges, and the serious importance of their decision, make the result of the above trial of arms an event of the deepest interest, not only to the army but to the American public generally. The official report will be looked for with interest.

New Method of Propulsion.

To propel a vessel, it is necessary that the propelling apparatus should grasp either the water, the earth or the air. Oars, paddles, paddle-wheels, screws, and all the multitudinous forms of ordinary and extraordinary propellers which act on the water, are similar in one respect—they urge the water backwards, and by the re-action or resistance thereof urge the vessel forward. The primitive method of moving boats by poles, one extremity of which are planted on the bottom, is still employed with great effect in moving rafts, scows, canal boats, and the like heavy masses, and this is almost the only example in common use of the second class of propellers. Propulsion by acting on the air is still more rare, and although, by a stretch both of language and logic, the immense number of sailing vessels may possibly be supposed, in some sense, to be moved by such propulsion, it is evident that the action of sails is very different from that of propellers proper. The sails simply receive the impulse of air in motion, while a propeller proper is active, or produces a dynamic effect on the medium in which it is placed. Thomas Silver, of Philadelphia, proposed, a few years ago, to move boats in shallow water by causing a steam engine to revolve a windmill, or huge screw, of light materials, mounted above the deck, and which should urge the vessel forward by its action on the air alone. This is the only example of this kind of propulsion within our recollection at this moment.

Although we have referred to poling as the only example of the second class of propellers *in common use*, there have been employed, to a limited extent, forms of propellers which, acting on the bottom, have urged vessels forward by the aid of machinery in the boat. The device under consideration is one of that class, and is the invention of J. W. Wetmore, of Erie, Pa. It is secured by patent dated June 16, 1857. The machinery within the boat may be a steam engine of any ordinary character. The power is employed in giving a rotary motion to a shaft resembling the shaft of paddle-wheels, but the ends, instead of wheels, carry simply cranks, from the pins of which the power is carried by connecting rods to corresponding cranks, on the shaft of a wheel below. This latter wheel is mounted in a frame, and allowed to rest on the bottom of the river, and to take hold of the same by teeth, so that as it revolves it drags the vessel

WETMORE'S METHOD OF PROPULSION.



onward, somewhat in a manner analogous to the motion of a locomotive. The frame allows the wheel to rise and fall to accommodate itself to the inequalities of the bottom.

A is the boat, and B the first motion shaft. C represents a crank on the extremity. D D represent radius rods, which extend from the shaft B to the shaft of a heavy wheel, E, at the bottom of the stream, forming a frame for the support of the same; allowing it to rise and sink at pleasure, but compelling it always to maintain a uniform distance from the shaft B. F F represent cranks on the shaft of E, and G G are connecting rods, which extend from the pins of the cranks C C to the pins of the corresponding cranks F F. The two cranks C C, being set at right angles to each other, enables one to work with full effect, while the other is at its dead point, so that the power is conveyed quite uniformly—the two cranks F F being of course necessarily set in the same manner. H is a curved rod, which is mounted between the radius rods D D, and connects to them by a stout fastening, H′. It travels up and down through the guides I and J, which guides are fixed on the bow of the vessel. This device supports the frame latterally, and ensures that the machinery be kept perfectly in line, while it allows the frame to work freely up and down. K is a windlass mounted on the deck, by which the whole may be elevated when not wanted for use. It also serves to prevent the frame and wheel from dropping into a vertical position when the boat chances to move into very deep water.

All propellers which act on a yielding medium, as air or water, lose a portion of their effect by the "slip," as it is termed, or backward motion of the fluid. But propellers of the class to which this belongs, where the wheel has a firm hold of the bottom, lose no power from such cause, and the whole power of the engine, minus that absorbed in friction, is expended in moving the vessel forward. It is most valuable in rapid streams, where by this means a slow motion of the engine ensures a moderate motion of the boat against the current, an effect which could not be produced by paddles working in the current itself, except by giving a very high velocity thereto. A slow motion of such paddles would not be sufficient to overcome the current, and the boat, although moving moderately though the water, would be actually moving backward down the stream.

For further information, the inventor may be addressed at the above place.

American Farmers should be Intelligent.

It is pretty generally understood that the mass of American farmers are "penny wise and pound foolish" in many things, and instead of working their farms on approved principles, they choose to plod along as their fathers did, and are consequently not up to the modern agricultural standard. The *Southern Farmer*, an excellent journal, published at Petersburg, Va., very justly remarks that one of the many means of improvement within the reach of our farmers is a journal that will keep them posted in regard to the "progress of mechanical inventions, particularly as relates to the application of these inventions to agriculture. The number of new implements brought out every year by the mechanical genius of our countrymen will appear almost marvelous to those who are not at the pains to obtain correct information on the subject. And for the farmer to pursue his calling intelligently, so as to grow his crops at the least possible expenditure of money, he should be willing to encourage and accept every improvement calculated to diminish the amount of manual labor. In the course of time, and that not very distant, judging from the past, we have no doubt that our fields will be plowed by the agency of steam. Every year it requires an increased amount of the productions of the earth to supply the necessities and luxuries of man, and these wants must be met by the introduction of new appliances. To every farmer, then, we would recommend the SCIENTIFIC AMERICAN as a paper from which he may derive the most valuable information. It is a journal of high character, reliable in its statements, familiar with the progress of the times in all the practical departments of science, and enjoying a wide circulation."

Important Inquiry about Iron.

The Secretary of the Treasury has issued to the iron manufacturers of this country the following important circular, from which a body of information is likely to be derived of incalculable value to the country. It is believed that the United States produce iron in some localities which oxydizes less rapidly than the iron of any other country:—

TREASURY DEPARTMENT,
August 31, 1857.

SIR—This department has been furnished with undoubted evidence that there is a great difference between irons from different mines in the United States, in the degree and rapidity with which they become oxydized. Congress, during the last session, appropriated the sum of $2,500 to test the different irons in this country in that particular. If these experiments shall establish the important fact that we have irons entirely or nearly proof against the corrosion of oxygen, it will multiply the uses of such iron to a very considerable extent for purposes to which it is now applied, and give it the preference over other irons for many purposes for which iron is now used.

The very large extent to which this material is superseding the use of wood and stone in public buildings, erecting at a cost of many millions of dollars annually, under this department, renders it of the greatest importance to know what irons resist for the longest period the action of oxygen.

I have, therefore, to request that you will forward to this department, by mail or express, two or three small samples of iron and a sample of ore from each of the mines worked by you; the samples of iron not to exceed a quarter of a pound each, and the ore not to exceed a half pound in weight. I would also request information on the following points, viz.: The extent of the ore deposit, facilities of mining ore, its distance from furnace, and distance of furnace from market, and mode of transportation thence; the fuel used; relative cost of charcoal, coke, bituminous and anthracite iron; kind of flux and its cost, etc.; the capacity of the establishment, and the amount of iron produced during the last year, and what it would be capable of producing under a ready sale and remunerating prices; any peculiarity in the iron produced; whether there are rolling-mills in the vicinity, and what descriptions of iron they roll; to what purposes most of the products of your furnaces are applied, and what description of iron the establishment mostly produces; when did your works first go into operation; what has been the annual production, and what the ruling prices each year since your works were started. You will please give the State and county in which your iron mine is situated, and the distance your fuel is transported. As it is the intention of the department to furnish you with the result of the experiments, you will please name the post-office through which to address you. If you know of any one in the iron business who does not receive a copy of this letter, and forward his address, one will be sent to him. You will realize the value of the information when you reflect upon the growing importance of the iron interest of the country—a fact attributable, in no small degree, to the introduction of iron as a substitute for other materials in our public buildings.

The policy of affording encouragement to this great interest, by promoting its production and increasing its consumption, has been commenced by the government, and I am desirous of obtaining all the information which can be had on the subject, with a view to its further development.

It is believed that there will be not only a willingness, but an anxiety, on the part of every one to advance the object which the department has in view.

I am desirous of obtaining the information asked for at the earliest practical moment.

Very respectfully,
Your obedient servant,
HOWELL COBB,
Secretary of the Treasury.

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Correspondents

T. & D. M., of Pa.—The sale of a patented machine does not give the purchaser a right to use it, unless under a license from the patentee. Of course the patentee could recover damages of you, and stop your using the machine. It matters not whether the party who sold the machine was solvent or otherwise; you could recover nothing from him, because you got all you bought, which was the machine. It was for you to have found out whether you could use it not, before purchasing.

A. M. C., of Mo.—We think that for many sections of the country where lumber is scarce, and the facilities for obtaining brick are not good, Fowlers' plan for building houses may be very good. We would advise you to write to Messrs. Fowlers & Wells, of this city, concerning it. They have had practical experience in the matter. Mr. Wells lives in a house of that kind, we believe.

J. B., of Ill.—We are glad to hear of your good success in introducing Halliday's wind-mill in the West, but regret to learn that our neighbors sacrificed so much on the wind-mill scheme in which they were interested. It does not look very well for Patent Attornies, who have other people's business intrusted to them for prosecution, to be engaged in the sale of patent rights; and when *we* engage in it, we shall relinquish our agency for the procuration of patents for other persons, and make the selling of patents our sole business. But we do not contemplate any such change of business at present; when we do, you will see it duly announced in the columns of this paper.

T. D., of Ind.—You are altogether in error in supposing that the idea of plowing by steam is a recent suggestion. About thirty years ago, an experiment was made in England, in Lancashire, when six acres of raw moss were turned up, as the report says, "in the most extraordinary style." Sods eighteen inches in breadth and nine inches in thickness were cut from the furrow and completely turned upside down. The possibility of steam-plowing was then established; but the machine was too complex and costly for ordinary purposes.

C. M., of N. Y.—We did not announce that Mr. Borden was the first person who had succeeded in concentrating and preserving milk. If you had carefully read our article, such an assumption would not have been pressed upon our attention. Your proposition to evolve the gas (which, by the way, is not the primary cause of the decomposition,) and suffering it to escape from the milk, and immediately afterwards excluding the air, is old, and practically worthless. As early as 1810, a report was made to the French government, which embodied substantially the views you express.

T. McN., of Ill.—"How many atmospheres can be condensed in a given space or cylinder, and the probable pressure on each square inch of surface." The number of atmospheres which can be condensed in a given space entirely depends on the strength of the material which encloses it, and the compressing power at command. But it is believed that all gases are capable of compression into the liquid state, had we the means of performing the experiments; this has already been effected with carbonic acid, while oxygen, hydrogen, nitrogen, and some compound gases have refused to liquify under pressures from 27 to 58 atmospheres, which last would give a pressure of 841 lbs. to the square inch.

W. R., of N. J.—The Patent Law requires that assignments be recorded in the Patent Office. They should be sent within three months of their date of execution.

C. G., of La.—We do not think your improvement in the manufacture of sal ammoniac and soda from the waste liquor of gas works is patentable, for the method of making carbonic acid by throwing steam on limestone while red hot, has been known and practised some time, and is often used where a large supply of carbonic acid is wanted, and where fuel is cheap.

F. D., of ——.—The melodeon bellows, now greatly used, is of the kind known as the suction or exhaustion bellows. It consists of two chambers, of which one, communicating with the reeds through the key valves, is merely a receiver for the wind, and the other is a pump. The pump and receiver communicate with each other by a valve opening into the pump, and the pump communicates with the atmosphere by a valve opening outwards.

T. McN., of Ill.—"For several winters past I have left a tin dipper in a bucket of water at night. In the morning the water would be frozen in the bucket solid around the dipper, while the water in the dipper would not be frozen. Tell me the reason?" Answer.—We can scarcely realize the fact set forth, and it will not be easy fully to explain the philosophy. Our opinion is, that the latent heat which kept the whole in a liquid state was being abstracted by the cold night air, but instead of its being diffused, it was conducted by the metallic surface (tin being a good conductor) to the water enclosed therein, and thus the enclosed water was kept liquid at the expense of the heat abstracted from the surrounding fluid.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, September 12, 1857:—

B. & H., of Conn., $27; T. E. L., of Wis., $25; H. T. G., of Mass., $25; W. S. W., of N. Y., $30; W. K. S., of La., $30; J. McA., of N. Y., $15; L. & H., of Ohio, $30; G. W. D., of N. Y., $30; N. W. H., of N. Y., $30; J. L E., of Mass., $30; E. D., of La., $30; S. B., of Ill., $45; H. O. E., of N. Y., $30; T. D., of Conn., $30; C. F. B., of Ohio, $37; O. L. C., of Ill., $30; L. S. S., of N. Y., $24; W. W., of N. Y., $25; G. E. S., of N. H., $10; S. E. D., of Conn., $25; A. S., of N. Y., $30; J. W., of N. J., $35; L. T., of Ala., $300; N. J. S., of Ala., $30; J. H. P. & Co., of N. Y., $100; E. L. T., of Pa., $30; D. W., of Ohio, $20; A. B. D., of Conn., $30; R. & M., of N. Y., $55; N. A. P., of Tenn., $25; L. & B., of Mass., $25; J. P., of Wis., $15.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Sept. 12, 1857:

E. P. S., of N. Y.; J. G. H., of N. J.; O. L. C., of Ill.; S. E. D., of Conn.; C. T., of Mich.; S. B., of Ill.; D. H., of Ky.; A. C., of Pa.; G. H., of N. C.; R. A., of Md.; P. A., of Me.; H. E. S., of N. Y.; B. G. P., of N. C.

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Planing Mills, Albany, N. Y.

TO INVENTORS AND MANUFACTURERS.—Rooms with power, for the exhibition of machinery, can be had in the Depot Buildings, corner of Elm and Franklin streets, New York. The location is extremely desirable for its prominence and convenience to the business part of the city. Apply to T. BENNETT, on the premises.

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Science and Art.

Setting and Sharpening Saws.

There is great variety in the methods adopted by sawyers inpreparing saws, even when they are intended for manufacturing the same kind of lumber. Nothing can be more palpable than that all cannot be right, yet it is likely that no method of shaping and working saws can ever be proposed which will be accepted by all, and some degree of diversity must always be endured.

Messrs. Hoe & Co., of this city, (a firm which has been long known as comprising within itself mechanics of no common order, and as particularly successful in the manufacture of saws,) furnish the following directions for setting and sharpening circular saws:—

Before the saw is set, the side towards the log should be perfectly flat, and all the difference in thickness between the outer edge and the middle of the saw must be on the side next to the board, so that the log may pass without pressing against the body of the saw; therefore, the flange that is fast on the mandrel should be a little concave, and the loose flange perfectly flat. If the saw is not in the required shape when screwed up between the flanges, it may be adjusted by packing between the flanges and the saw with writing paper.

After the saw has been made to run as true as possible sidewise, turn it backwards slowly against a file that is held firmly on an immovable bearing. This operation will trim off the longest teeth, and leave the points all equally distant from the center; then file off the top of the tooth until the facet made by the jointing file is but just perceptible at the point, and the saw is prepared for setting.

To set the saw, we use a crotch punch of hardened steel, and a riveting hammer that weighs about a pound. The angle of the punch should be a trifle greater than that of the point of the tooth, and a little convex lengthwise of the groove—as denoted by the curved line in the annexed cuts, Figs. 1 and 2 being two views of the punch—so as to spread

Fig. 1

Fig. 2

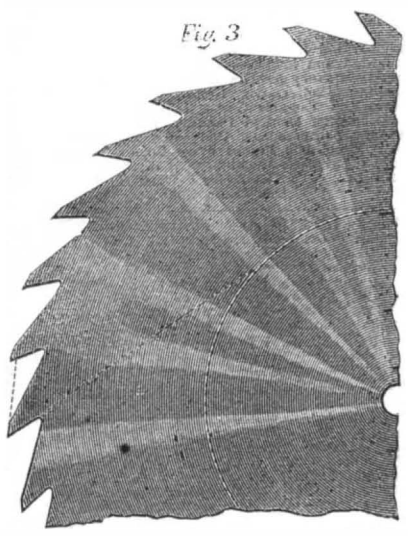
the point of the tooth from the center both ways. Hold the punch against the point of the tooth parallel with the side of the saw, and with repeated moderate blows of the hammer upset the points of the tooth equally on both sides to the required breadth. To support and strengthen the cutting edge after the teeth are upset enough, we may with considerable advantage draw out the top of the tooth with the riveting hammer, while a piece of iron fitted into the space below is held firmly with a perfect bearing under the hammer.

The teeth of circular saws for ripping should be pitched forward as much as they can be, and leave sufficient strength of tooth and space for sawdust; and the number of teeth should be proportioned to the hardness of the timber to be sawed, say for a 48-inch saw 30 teeth for hard wood, and 24 for soft.

For a saw of 48 inches diameter and 30 teeth, the pitch (by the pitch of saw teeth we mean the inclination of the face of the tooth up which the shaving ascends; the distance from point to point, we call the space) of the teeth may be determined in the following manner:—Describe a circle from the center of the saw equal to one-half of its diameter, and a line drawn from the point of the tooth across the saw, touching the outside of the circle, will give the pitch. For 24 teeth, the circle may be five-eighths of the diameter of the saw.

The back or top of the tooth for about an inch back from the point, should be on a line drawn from the point back to the next tooth, and as much below the point of that tooth as each tooth is required to cut. For instance, if your feed is equal to 1½ inches to one revolution of the saw, and the saw has 30 teeth, each tooth must cut one-twentieth of an inch. After the saw is set as directed, the teeth must

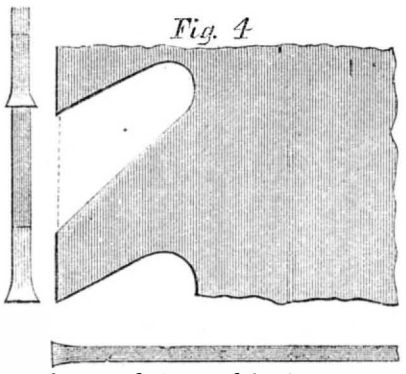
Fig. 3



be filed up sharp, finishing with a fine, single-cut file. The cutting edge of each tooth should be parallel with the center of the mandrel, and the front and back of the teeth kept on the lines as described, and shown in Fig. 3.

Mill saws, with teeth such as are shown in Fig. 4, after being straightened on the edge,

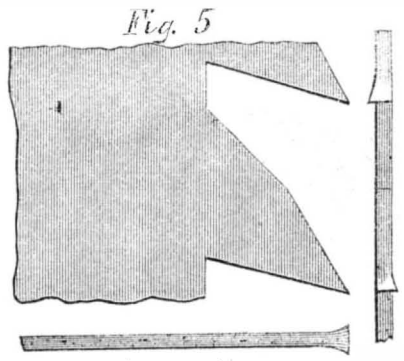
Fig. 4



must be set and sharpened in the same manner as circulars. The pitch of the teeth is 60 degrees.

Fig. 5 is another form of tooth and plan of setting and sharpening, not so good as No. 3, but a great deal better than the old plan. In this case, after the saw is straightened on the

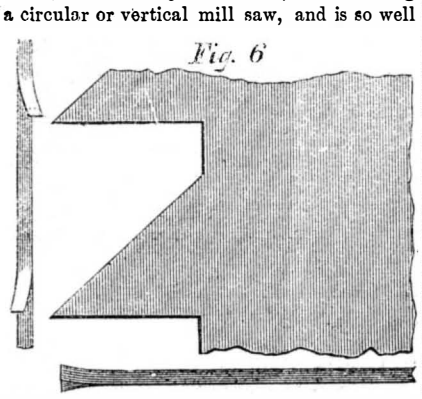
Fig. 5



edge, the teeth are filed sharp at the points, like a cross-cut saw, alternately highest on the outside, and then upset with the punch.

Fig. 6 is the oldest, most in use, and, we think, the most objectionable plan for setting a circular or vertical mill saw, and is so well

Fig. 6



understood among sawyers as to require no description from us. In this case, after the tooth is worn off so as to be thinner at the point, it may be spread out to its original thickness with the crotch punch.

Fig. 7 is a crotch punch, for widening the points of saw teeth, and Fig. 8 is a tool made in three pieces. The parts A and B are made of steel, nicely fitted and hardened, and are

Fig. 7

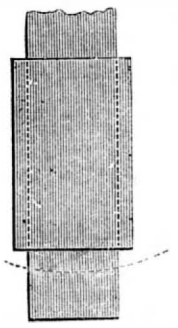
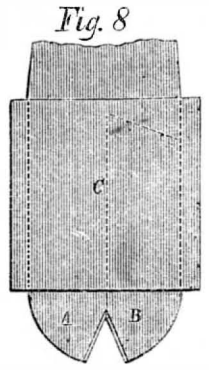


Fig. 8



bound together with the iron band, C. It is used to widen the points of saw teeth when they have become worn and blunted on the corners, and may be used without the necessity of filing the saw afterwards.

Figs. 1 and 2 represent a punch somewhat similar to the last, made in one piece. It is stronger, and on that account better adapted to upsetting heavy saws.

If these rules are strictly observed, the saw will always balance, and there will be no occasion for using a gumming machine.

The Right of Expatriation.

It not unfrequently happens that natives of the United States remove to the adjoining provinces, and remain there without taking any legal measures to dissever their former political connection. Sometimes inventors have applied to us to know what rights they possess under such circumstances. The following opinion from the United States Attorney General will enable all to decide for themselves how far removal has effected their citizenship. He says:—

"There is no statute or other law of the United States which prevents either a native or a naturalized citizen from severing his political connection with the government, if he see proper to do so, in time of peace, and for a purpose not directly injurious to the interests of the country. There is no mode of renunciation prescribed. In my opinion, if he emigrates, carries his family and effects with him, manifests a plain intention not to return, takes up his permanent residence abroad, and assumes the obligation of a subject to a foreign government, this would imply a dissolution of his previous relations with the United States, and I do not think we could or would afterward claim from him any of the duties of a citizen."

Parlor Laboratory.

Astonishing Experiment.—Into a small retort place an ounce of strong liquor of potash—that is, pure potash dissolved in water, together with about a drachm of phosphorus. Let the neck or beak of the retort dip into a saucer of water, say half an inch deep; now very gently heat the liquid in the retort with a spirit-lamp until it boils. In a few minutes the retort will be filled with a white cloud, then the gas generated will begin to bubble at the end of the retort; a minute more, each bubble as it issues from the boiling fluid will spontaneously take fire as it comes into the air, forming at the same time the philosopher's ring of phosphoric acid. Care is required in handling phosphorus; but our young chemical readers will, we think, not forego this wonderful experiment for the want of due attention, for, without proper care on their part, we must give up showing them wonders, even greater than these. S. Piesse.

The Late Commissioner of Patents.

In our notice of Judge Mason, ex-Commissioner of Patents, last week, we alluded to his preparation of a code of laws for Iowa, and stated that this service was performed while he was Commissioner. It should have read "before his appointment as Commissioner."

Literary Notices.

Wells' Natural Philosophy, for the use of schools, academies and private students; introducing the latest results of scientific discovery and research, and arranged with special reference to the practical application of physical science to the arts and experiences of every-day life. By David A. Wells, A. M., author of "Science and Common Things," "Annual of Scientific Discovery," etc.; with nearly 400 illustrations. New York: Ivison & Phinney. 12mo. 450; $1. In our opinion this work is better adapted for elementary instruction than any other now before the public. As it is fully up to the times as regards modern research, it will also be found most useful as a book of reference in private libraries. A distinguishing characteristic of the work is the number and beauty of its illustrations. They are different from the old stereotype figures that have been used for the last fifty years in every educational work, and most clearly explain the subject-matter, almost independently of the text. We believe we do good service to the cause of science and education by recommending teachers and others to examine this book.

Charleston Medical Journal and Review.—C. Happoldt, M. D., Editor and Publisher.—This is the organ of the allopathic school of medicine in the South, and is an able and learned work. The present number contains a likeness of Dr. Kane, with a memoir; also the conclusion of an instructive article on "Life and its Relations," by Dr. Burns. The *Journal* is published bi-monthly, at $4 per annum. It appears to have an international circulation.

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In announcing the THIRTEENTH Annual Volume of the SCIENTIFIC AMERICAN, which commenced on the 12th of September, the Editors and Publishers embrace this opportunity to thank their numerous friends and subscribers for the encouraging and very liberal support heretofore extended to their journal, and they would again re-assure its patrons of their determination to render the Scientific American more and more useful, and more and more worthy of their continued confidence and good will. The undersigned point to the past as a guarantee of their disposition to always deal justly and discriminatingly with all subjects of a Scientific and Mechanical character which come within their purview.

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